UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry
Division of Barberry Eradication

PROGRESS IN BARBERRY ERADICATION IN 1932
and
Summarized Results Covering the Period 1918 - 1932

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INTRODUCTION

For many years grain farmers have recognized black stem rust as one of the most treacherous of all small grain diseases. Not infrequently good crops, developed to within a few weeks of maturity have been totally destroyed or the yield and quality seriously damaged by sudden outbreaks of the disease. Where rust inoculum is present similar conditions favor the rapid development of both the grain and the fungus. The more succulent the grain plant grows the more susceptible it is to stem rust infection. When the disease appears during the early stages of crop growth, little can be done to avoid serious damage.

Insurance against black stem rust involves preventive efforts as no practical cure for the disease, once it begins to spread through the growing grains, has been developed. Thus in 1916 when a period of steadily increasing losses was climaxed by the most severe epidemic of the disease ever witnessed in this country, there appeared only two possible ways in which some insurance could be provided against future crop failure caused by rust. These were to develop varieties of grain resistant to rust and in the important spring grain areas to eliminate common barberry bushes on which the fungus lives during the spring months.

Within the past few years barberry has been found to do more than merely harbor the fungus for a short period during the year. Hybridization of rust spores takes place on the leaves, thus these bushes become a source of new forms of rust which may attack varieties of grain heretofore believed resistant or immune to the fungus.

The common or rust-spreading barberry was introduced from Europe by the colonists. In an effort to prevent the so-called "blasting", a

term applied to rusted grain, Connecticut passed legislation in 1726 intended to banish barberry bushes from the commonwealth. Similar laws were passed in Massachusetts in 1754 and in Rhode Island in 1772. Due to the lack of general information on the subject and organized eradication efforts, the elimination of barberry bushes failed.

The common barberry thrives under very diverse soil and climatic conditions, thus by 1918 when the destructive rust epidemics of 1904 and 1916 together with those of lesser extent and severity that occurred in the meantime forced the attention of farmers, business men, and scientists to the eradication of barberry as a means of gaining relief from rust, the bushes had become generally distributed in many of the important northern grain growing States.

The barberry eradication campaign begun in 1918 has proven an effective step toward improving the quality of small grains, stabilizing production and production costs and providing the much needed insurance against crop failure and abnormal market conditions often caused by widespread epidemics of rust. With a definite trend toward controlling the supply to balance with demand, insured stability of yields and quality of food crops becomes increasingly important.

Because black stem rust is a regional problem and has a direct bearing on the entire consuming public, the Federal Government has assumed supervisory responsibility for the work. The stem rust control program is being conducted in cooperation with State and independent agencies in Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, Montana, Nebraska, North Dakota, South Dakota, Wisconsin and Wyoming.

GENERAL SUMMARY 1918-1932

The Relation of Barberry to Black Stem Rust In the northern part of the United States the rust-spreading barberry (Berberis vulgaris L.) and some closely related varieties is the only known host for the stem rust fungus. Experience has shown that the more numerous these bushes become in grain growing areas, the more probability there is that epidemics of the disease will occur. Rust caused little difficulty when wheat growing was first developed in the Great Plains area, as the common or rust-spreading barberry is not native to this country. Early settlers carried barberry with them as they moved westward. As

the bushes became numerous the rust hazard increased until in 1916 conservative estimates placed the losses from this one source in the United States at more than two hundred million bushels. It was evident that some control measure was necessary. Based upon several years of scientific observation in the United States, and to some extent following the example of Denmark, Germany, and France, the eradication of the spring host for the fungus was adopted as the most practical method of providing immediate relief to grain farmers.

Favorable Results Accompany Eradication Program Since 1918 more than eighteen million rust-spreading barberry bushes have been destroyed in the thirteen more important spring wheat growing States. Of these some were planted for ornamental and hedge purposes, but a larger percentage grew from seed scattered by birds. With the eradication of these bushes there has been a steady reduction in the number and severity of stem rust epidemics.

The following table shows the trend losses from stem rust have taken since 1916:

LOSSES FROM STEM RUST DECREASE AS PROGRESS IS MADE IN BARBERRY ERADICATION

Wheat Losses Resulting From Black Stem Rust in 13 Northern States by 5-Year Periods		Rust Spreading Barberry Bushes Destroyed Since Beginning of Stem Rust Control Program	
1916-20	285,000,000 Bu.	1916-20	4,000,000 Bushes
Average Annual Loss	57,000,000 Bu.		
1921-25	85,000,000 Bu.	1916-25	12,000,000 Bushes
Average Annual Loss	17,000,000 Bu.		
1926-30	45,000,000 Bu.	1916-30	18,000,000 Bushes
Average Annual Loss	9,000,000 Bu.		

Had there been no organized effort to free the spring wheat area from barberry, the bushes would have continued spreading at a steadily increasing rate resulting in more numerous and destructive epidemics of the disease.

Studies of the Division of Crop and Livestock Estimates of the

United States Department of Agriculture indicate that reducing losses from stem rust is improving the accuracy of July 1 estimates of the wheat production in North Dakota as the excessive shifts in the probable yield per acre heretofore attributed to rust damage have been largely eliminated.

Present Status of Program In several of the western States, including Montana, Wyoming, Colorado, Nebraska, South Dakota, and North Dakota, rust-spreading barberry bushes are becoming few and scattered but in such States as Minnesota, Iowa, Wisconsin, Illinois, Michigan, Ohio, and Indiana, many bushes remain. Each year these produce an abundance of seed some of which may be scattered for a considerable distance by birds, running water, and other agencies. Many of the bushes found during the past few years have been located in wooded areas, along streams, and on land owned by farmers who have no personal interest in grain production. It is in areas of this kind that the need for continued organized effort in eradication is most readily recognized.

The general public is gradually becoming better informed with regard to stem rust control practices and, as a result, not only property owners but city and country children who have learned about the disease in schools are more actively participating in the task of freeing local communities of rust-spreading bushes. The uniformly organized efforts of these people are necessary if the task is to be satisfactorily completed. As more people become informed, local efforts in eradication make possible a more efficient expenditure of the smaller appropriations now available for federal and State participation. Control of black stem rust is a problem wherever small grains are grown extensively and centralized supervision is considered a federal responsibility.

THE ADMINISTRATION OF BARBERRY ERADICATION DURING 1932

Organization Barberry eradication procedure in 1932 was much the same as in 1931. There was a tendency toward lengthening the field season and directing more efforts toward the informational side of the work, thus adding more of the responsibility for reporting and eradicating bushes to the individual property owners. As in past years, an attempt was made to maintain a practical balance between survey and eradication, informational, and investigational activities. With the public generally becoming better informed regarding the fundamental principles involved in the program, greater progress can be made

by shifting the emphasis to the educational side of the work in order to reach more people with information which will guide the efforts of individual property owners. During 1932 representatives of the Division of Barberry Eradication were maintained in each of the 13 States. By continuing district administrative offices in the western part of the area where the extent of the remaining eradication problem is rapidly diminishing, more funds were released for field service work.

Cooperation Organizations cooperating with the Division of Barberry Eradication, Bureau of Plant Industry, United States Department of Agriculture, in conducting the eradication program are State Colleges of Agriculture, State Departments of Agriculture, and many independent agricultural and business organizations within the thirteen States. The independent organizations are represented by the Conference for the Prevention of Grain Rust, Minneapolis, Minnesota. From the beginning this group has taken an active interest in the control work and each year has furnished liberal financial support in developing the informational side of the program. In the center of the hard red spring wheat area the Farm Bureau and Grange give active support. The North Dakota Retail Merchants Association and The Greater North Dakota Association have been particularly interested in the welfare and conduct of the work. Their active participation has been an important factor in bringing about a more general adoption of the recommended rust control practices. The noticeable increase in the number of individual property owners who are assuming the responsibility of keeping their own properties free from rust-spreading bushes is perhaps most indicative of the progress toward permanent control of the disease.

Finance The Federal Government through congressional appropriations has taken the lead in financing the barberry eradication campaign. The control of black stem rust is a matter of national importance and the success in any one State depends very largely upon the joint participation of other States in the area in preventing interstate distribution of susceptible barberries and eradicating bushes that already have gained a foothold. The federal money available for expenditure during the fiscal year ending June 30, 1933, was approximately $196,400. This is less than two-thirds of the amount expended in 1931. Directly and indirectly interested States have contributed $78,365.

PROGRESS IN BARBERRY ERADICATION DURING 1932

Although expenditures for stem rust control work were reduced by more than one-third in 1932, with the added cooperation of individuals, it has been possible to give attention to eradication work in areas where stem rust has most frequently recurred. Participation of local people in the clean-up work and further use of local labor have made possible approximately the same progress in 1932 as in 1931.

Survey and Eradication Areas selected for the attention of eradication crews in 1932 were given careful consideration on the basis of rust losses in previous years and the probability of further spread of the existing barberry bushes. Rust data accumulated in the past was carefully reviewed in an attempt to determine localized areas in which damaging epidemics of stem rust frequently developed. A final selection of areas to be given attention was made by the local representative in charge of barberry eradication activity following a discussion of the situation with State cooperators and administrative officials. The final plan for procedure was approved by the principal pathologist in charge of the division. During the summer of 1932 barberries were found on 1690 properties. More than 175,951 bushes were destroyed. In States such as Ohio and Wisconsin an attempt was made to clean up many of the known areas of escaped bushes and to give assistance in localities where grain growers have been most troubled with rust. The policy of encouraging property owners and children to report bushes has made it possible to direct the efforts of eradication crews to the localities where bushes are known to exist, thus avoiding the task of making a detailed survey in areas comparatively free from bushes.

Informational Activities A review of the eradication results in 1932 indicates the shift of considerable effort from survey or service work to informational work. By obtaining the active participation of property owners in reporting and assisting with the eradication, the expense of locating bushes, heretofore a costly part of our program, has been decidedly reduced. In keeping with the policy of encouraging individual property owners to assume more of the responsibility for clearing their own farms and community of barberries, the purely service work is closely allied with and is guided largely by informational work. Although the educational activities are being met with a public response beyond expectations, a combination of educational and service work must remain an important part of the program in order to insure an effective clean up of barberries growing on public lands, in cities and towns, and in non-agricultural communities where interest in small grains is lacking.

Preparation of Materials The preparation of informational material is an extremely important part of any activity which requires contact with and the active participation of a large percentage of people residing within the area where the program is being conducted. The comparatively large amount of literature used in conducting this program is carefully considered not only from the standpoint of effectiveness but with regard to cost. Many schools have become interested in the study of stem rust control, not alone because of local application, but as an example of a plant disease which is economically important and of general interest to both the producing and consuming public. This growing interest has made it necessary to prepare materials suitable for classroom use. Boys and girls in agriculture and nature study classes in both rural and urban schools, as a result of classroom instruction, are greatly stimulating progress and decreasing the cost of the campaign by doing much of the work heretofore required of Department of Agriculture agents.

In order to meet the educational demands, there is in the process of development a brief lesson plan revised to fit the needs of rural school teachers, and an illustrative chart suitable as a classroom reference. These materials will be supplemented with the brief pamphlet now in use which provides pupils and parents with the more important facts pertaining to stem rust control. More emphasis is being placed upon fair demonstrations and direct correspondence with individual grain growers by means of circulars and personal letters. In addition instructors may, upon request, obtain specimens and prepare microscope slides for more detailed laboratory studies.

Summary of Cooperation Received from Children, 1928-32

State	Children reached directly by informational activities		Number of Children reporting properties		Number of bushes found by children	
	1932	1928-32	1932	1928-32	1932	1928-32
Colorado	4,810	8,496	10	13	13	19
Illinois	23,489	32,652	79	197	563	1,430
Indiana	11,115	61,705	2	28	2	87
Iowa	24,544	63,069	236	348	34,306	38,125
Michigan	9,563	30,136	59	104	293	376
Minnesota	52,346	108,320	86	267	288	2,242
Montana	17,992	28,984	8	9	26	64
Nebraska	4,157	5,843	28	40	120	207
North Dakota	19,649	51,174	9	17	101	262
Ohio	9,597	9,597	10	16	379	459
South Dakota	6,612	10,291	9	27	11	101
Wisconsin	-	4,286	-	24	-	38
Wyoming	898	1,309	1	1	1	1
Totals	184,772	414,862	537	1,091	36,103	43,411

INVESTIGATIONS

Investigational work conducted in 1932 was largely a continuation of the program that has accompanied and guided the application of control measures since the beginning of eradication efforts in 1918. The work is carried on in cooperation with the University of Minnesota at University Farm, St. Paul, and embraces the following studies: Overwintering of the summer stage of stem rust; stem rust in Mexico and Texas and its relation to the occurrence of the disease in the Mississippi River Valley; migration of rust from south to north; the spread of rust from barberry; and the development of the disease in the spring wheat area.

As a part of this program, each year a physiologic form survey is made to determine which of the forms of stem rust are most prevalent near and away from barberry bushes. Hybridization studies involving the factors influencing germination of teliospores, the occurrence of new forms of rust, and diploidisation, are a part of the season's activities.

Germination of Teliospores In order to facilitate the studies on hybridization, attempts have been made to shorten the period of dormancy of teliospores. Results of the past two years are given here briefly. When teliospores are produced at a temperature of 1°-10°C and then alternately wetted and dried a few times, it has been found that the normal resting period of five to eight months can be shortened to six weeks. Teliospores formed at low temperatures either in the greenhouse or in cold chambers or those produced late in the season in the field, usually germinated more abundantly and also required a shorter rest period than teliospores formed at higher temperatures. When stored outdoors and brought indoors in late winter, teliospores usually germinated after a few treatments consisting of alternate wetting and drying.

Tests made with different varieties and physiologic forms of Puccinia graminis indicated differences between varieties and between forms in germinability of teliospores. Germination was determined by the results of inoculating barberries in the greenhouse. It was found that teliospores of the secalis variety of stem rust, in general, could be made to germinate most easily; those of P. graminis tritici and P. graminis agrostidis germinated after somewhat longer treatment; while all attempts to shorten the resting period of spores of the avenae variety have been unsuccessful. When teliospores of four physiologic forms of P. graminis tritici produced under the same conditions in the greenhouse were treated in 1930-31, germination was obtained in only

two of the four. In tests made the following year, germination was obtained in three out of four forms. Further studies must be made with physiologic forms, however, before any significance can be attached to the results in relation to epidemiology studies.

Susceptibility and Resistance of Barberries In 1932, 236 series of barberries were inoculated with either the wheat or the rye stem rust variety of teliospores. The number of plants in each series varied from three to six, the greater number of the series having five plants, one or two of which were known to be susceptible and were included as checks. Infection occurred in one or more of the plants in 190 of these series or about 80 per cent. Some species were inoculated more often than others because of the larger number of plants available for testing. For example, Berberis aquifolium plants were inoculated 76 times in the 190 series wherein infection was observed, while B. asiatica was inoculated but once. Three new species were tested for the first time this year. The two "evergreen" species, B. candidula and B. chenaultii, proved themselves immune, while the third one, B. rugidicans from France, was about as susceptible as B. vulgaris. A larger number of tests were made of B. koreana and B. nervosa, particularly the former. Both of them are very resistant, but not immune, while the B. vulgaris checks have been heavily rusted. The majority of the newer species now being tested have been very resistant in the inoculations made to date. One species, B. vernae, is not the same in the various lots from widely separated sources, either in botanical characters or rust resistance. One lot received from a nursery in New Jersey was more like a form of B. vulgaris than any other species and was also quite susceptible in the limited number of tests made. It is inadvisable to release this or other species of barberry for sale in the horticultural trade until they are apparently homogenous in botanical characters and rust resistance.

Chemical Investigations A study of chemical methods of eradicating barberry bushes begun in 1930, as a cooperative project with the Division of Blister Rust Control, was continued through 1932. Further study was made of treated bushes on the plots at Maumee, Ohio, and on the new test plots at Pennsylvania Furnace, Pa. The object of this investigation is to find, if possible, a readily available chemical that will compare in cost with No. 4 stock salt and in smaller quantities prove equally as effective a killing agent. Although the salt treatment that is being used is effective, there is a possibility that some chemical may be found that will prove less expensive both with regard to initial cost and cost of handling.

Nursery Inspection When Quarantine No. 38 pertaining to the distribution of barberry bushes was revised an inspection project was undertaken to assist nurserymen in clearing their properties of varieties of barberry susceptible to stem rust. Most nursery owners have been found more than willing to cooperate in avoiding the distribution of harmful species in the important grain growing areas. Quarantine No. 38 (Revised) prohibits the interstate shipment of barberries until nurserymen have cleared their properties of species and varieties susceptible to the disease.

Since 1931 more than 85 nurserymen have requested that their properties be inspected. Forty-six shipping permits have been issued after it was established that no susceptible varieties remained on the premises. The nursery inspection work conducted by this division is more than a regulatory matter, as in connection with it, provision is made for identification of questionable varieties and the testing of new species for susceptibility to rust infection.

A complete report covering the investigational activities is on file in this division. The investigational, informational, and service efforts of this Division are interwoven in an attempt to make the entire program as effective and lasting as possible. The investigational work provides the basis on which recommendations are made to grain growers. Through informational work an attempt is made to reach as many as possible of the grain growers and others interested in small grain production with practical recommendations for preventing the recurrence of rust. The purely eradication service is provided in communities where bushes have become concentrated to the extent that the efforts of individuals is not sufficient to effectively eliminate the local sources of stem rust inoculum.

The following tables give statistical information bearing upon the progress that has been made in the eradication campaign since it began in 1918:

First Survey, Properties, January 1 to December 31, 1932.

Table 1. Data showing, by States, the number of properties on which barberry bushes were found and destroyed in all surveys, and the number of properties upon which seedlings were found and destroyed in the first and second surveys in the calendar year January 1 to December 31, 1932.

State	Number of properties on which bushes were found				Total number of properties cleared of bushes			Number of properties on which seedlings were ---			
	In cities and towns	In country		Total in city and country	Dug	Treated	Total	Found	Destroyed		
		Having escaped bushes	Total						Dug	Treated	Total
Colorado	3	1	3	6	3	3	6	0	0	0	0
Illinois	33	211	234	267	47	220	267	43	26	17	43
Indiana	5	90	109	114	16	98	114	24	2	22	24
Iowa	79	222	280	359	76	283	359	74	20	54	74
Michigan	164	143	160	324	191	133	324	58	44	14	58
Minnesota	14	105	117	131	28	103	131	9	2	7	9
Montana	2	1	1	3	2	1	3	3	3	0	3
Nebraska	0	10	20	20	2	18	20	1	1	0	1
North Dakota	1	4	4	5	1	4	5	4	1	3	4
Ohio	72	58	135	207	127	80	207	42	19	23	42
South Dakota	6	15	17	23	6	17	23	1	1	0	1
Wisconsin	15	189	210	225	43	187	230	29	12	18	30
Wyoming	2	2	4	6	4	2	6	3	3	0	3
Total	396	1,051	1,294	1,690	546	1,149	1,695	291	134	158	292

First Survey, Bushes and Seedlings, January 1 to December 31, 1932.

Table 2. Data showing, by States, the number of barberry bushes found and destroyed in all surveys, and the number of seedlings found and destroyed in first and second surveys in the calendar year January 1, to December 31, 1932.

State	Number of bushes found —				Number of bushes destroyed			Number of seedlings —			
		In country							Destroyed		
	In cities and towns	Escaped	Total	Total	Dug	Treated	Total	Found	Dug	Treated	Total
Colo.	4	141	144	148	8	140	148	141	81	60	141
Ill.	626	4,693	4,882	5,508	398	5,110	5,508	10,142	1,690	8,452	10,142
Indiana	18	3,284	3,422	3,440	82	3,358	3,440	7,113	135	6,978	7,113
Iowa	783	9,811	10,345	11,128	782	10,346	11,128	39,405	21,716	17,689	39,405
Mich.	1,332	9,815	9,935	11,267	1,596	9,671	11,267	20,521	6,847	13,674	20,521
Minn.	46	1,500	1,648	1,694	133	1,561	1,694	2,183	440	1,743	2,183
Mont.	2	6	6	8	7	1	8	58	58	0	58
Nebr.	0	24	81	81	4	77	81	14	14	0	14
N. Dak.	1	18	18	19	1	18	19	253	100	153	253
Ohio	308	3,065	3,518	3,826	764	3,062	3,826	16,095	7,050	9,045	16,095
S. Dak.	13	41	43	56	8	48	56	43	43	0	43
Wis.	25	31,052	31,296	31,321	239	31,091	31,330	9,188	2,714	6,480	9,194
Wyo.	8	10	45	53	21	32	53	93	93	0	93
Total	3,166	63,460	65,383	68,549	4,043	64,515	68,558	105,249	40,981	64,274	105,255

First Survey, Properties, April 1, 1918 to December 31, 1932.

Table 3. Data showing, by States, the number of properties on which barberry bushes were found and destroyed in all surveys, and the number of properties upon which seedlings were found and destroyed in first and second surveys, from April 1, 1918 to December 31, 1932.

State	Number of counties covered by original survey	Number of properties on which bushes were found				Total number of properties cleared of bushes			Number of properties on which seedlings were -			
		In cities and towns	In country		Total in cities and country	Dug	Treated	Total	Found	Destroyed		
			Having escaped bushes	Total						Dug	Treated	Total
Colo.	69.84	1,660	179	333	1,993	1,788	204	1,992	140	31	109	140
Ill.	102	11,817	2,034	4,327	16,144	13,475	2,669	16,144	499	381	118	499
Ind.	92	3,861	621	1,727	5,588	4,757	830	5,587	189	77	112	189
Iowa	99	7,443	1,735	3,992	11,435	9,326	2,107	11,433	615	193	422	615
Mich.	68.1	5,507	2,574	6,439	11,996	9,793	2,203	11,996	1,031	652	379	1,031
Minn.	87	3,272	1,043	2,704	5,976	5,087	889	5,976	571	413	158	571
Mont.	55	252	84	190	442	332	108	440	73	53	20	73
Nebr.	93	3,262	246	1,034	4,296	3,711	585	4,296	107	51	56	107
N. Dak.	53	580	6	397	977	795	182	977	58	15	43	58
Ohio	88	8,490	1,769	4,304	12,794	10,741	2,053	12,794	1,183	562	621	1,183
S. Dak.	69	546	232	825	1,371	857	514	1,371	116	96	20	116
Wis.	71	7,224	2,330	4,178	11,402	9,337	2,065	11,402	727	323	404	727
Wyo.	8.12	82	3	26	108	95	13	108	13	11	2	13
Total	955.06	53,996	12,856	30,526	84,522	70,094	14,422	84,516	5,322	2,858	2,464	5,322

First Survey, Bushes and Seedlings, April 1, 1918 to December 31, 1932

Table 4. Data showing, by States, the number of barberry bushes found and destroyed in all surveys, and the number of seedlings found and destroyed in first and second surveys, from April 1, 1918 to December 31, 1932.

State	Number of bushes found				Bushes Destroyed	Number of Seedlings	
	In Cities and towns	In country		Total		Found	Destroyed
		Escaped	Total				
Colorado	20,365	4,833	7,211	27,576	27,575	19,971	19,971
Illinois	121,194	251,224	297,157	418,351	418,351	2,194,705	2,194,705
Indiana	78,184	113,788	129,646	207,830	207,828	31,237	31,237
Iowa	654,988	87,954	188,974	843,962	843,956	256,163	256,163
Michigan	59,647	664,912	748,017	807,664	807,664	4,969,650	4,969,650
Minnesota	593,386	99,833	212,665	806,051	806,051	66,471	66,471
Montana	7,368	2,966	5,886	13,254	13,246	21,982	21,982
Nebraska	73,577	9,217	26,504	100,081	100,081	24,460	24,460
North Dakota	14,754	168	9,023	23,777	23,777	3,084	3,084
Ohio	221,636	180,488	202,877	424,513	424,513	1,889,024	1,889,024
South Dakota	24,102	21,824	37,728	61,830	61,830	29,349	29,349
Wisconsin	281,748	3,301,902	3,314,689	3,596,437	3,596,437	1,497,320	1,497,320
Wyoming	3,961	11	301	4,262	4,262	344	344
Total	2,154,910	4,749,120	5,180,678	7,335,588	7,335,571	11,003,760	11,003,760

Second Survey, Properties, January 1 to December 31, 1932.

Table 5. Data showing, by States, the number of properties on which barberry bushes and seedlings were found and destroyed on second survey in the barberry eradication campaign in the calendar year January 1, to December 31, 1932.

State	Number of counties surveyed	Number of properties on which bushes were found -				Total number of properties cleared of bushes			Number of properties on which seedlings were -			
		In cities and towns	In country		Total in cities and country	Dug	Treated	Total	Found	Destroyed		
			Having escaped bushes	Total						Dug	Treated	Total
Colo.	0	0	0	0	0	0	0	0	0	0	0	0
Ill.	3.43	33	211	234	267	47	220	267	38	23	15	38
Ind.	0	0	0	0	0	0	0	0	0	0	0	0
Iowa	.06	58	191	234	292	57	235	292	59	15	44	59
Mich.	1.32	150	99	116	266	166	100	266	42	30	12	42
Minn.	0	0	0	0	0	0	0	0	0	0	0	0
Mont.	0	0	0	0	0	0	0	0	0	0	0	0
Nebr.	2.38	0	9	11	11	0	11	11	1	1	0	1
N. Dak.	0	0	0	0	0	0	0	0	0	0	0	0
Ohio	2.00	43	32	97	140	89	51	140	11	4	7	11
S. Dak.	0	0	0	0	0	0	0	0	0	0	0	0
Wis.	.07	5	78	84	89	8	81	89	14	10	4	14
Wyo.	0	0	0	0	0	0	0	0	0	0	0	0
Total	9.26	289	620	776	1,065	367	698	1,065	165	83	82	165

Second Survey, Bushes and Seedlings, January 1 to December 31, 1932.

Table 6. Data showing, by States, the number of barberry bushes and seedlings found and destroyed on second survey in the barberry eradication campaign in the calendar year January 1 to December 31, 1932.

State.	Number of bushes found -			Number of bushes destroyed:			Number of seedlings -			
	In cities and towns	In country						Destroyed		
		Escaped	Total	Total	Dug	Treated	Total	Found	Dug	Treated	Total
Colo.	0	0	0	0	0	0	0	0	0	0	0
Ill.	626	4,693	4,882	5,508	398	5,110	5,508	6,982	1,580	5,402	6,982
Ind.	0	0	0	0	0	0	0	0	0	0	0
Iowa	401	8,106	8,327	8,728	527	8,201	8,728	21,786	6,220	15,566	21,786
Mich.	1,304	8,702	8,822	10,126	1,259	8,867	10,126	20,039	6,480	13,559	20,039
Minn.	0	0	0	0	0	0	0	0	0	0	0
Mont.	0	0	0	0	0	0	0	0	0	0	0
Nebr.	0	23	66	66	0	66	66	14	14	0	14
N. Dak.	0	0	0	0	0	0	0	0	0	0	0
Ohio	79	788	1,212	1,291	249	1,042	1,291	2,691	231	2,460	2,691
S. Dak.	0	0	0	0	0	0	0	0	0	0	0
Wis.	9	24,806	24,822	24,831	16	24,815	24,831	7,314	2,707	4,607	7,314
Wyo.	0	0	0	0	0	0	0	0	0	0	0
Total	2,419	47,118	48,131	50,550	2,449	48,101	50,550	58,826	17,232	41,594	58,826

Second Survey, Properties, January 1, 1922 to December 31, 1932.

Table 7, Data showing, by States, the number of properties on which barberry bushes and seedlings were found and destroyed on second survey in the barberry eradication campaign from January 1, 1922 to December 31, 1932.

State	Number of counties surveyed	Number of properties on which bushes were found				Total number of properties cleared of bushes			Number of properties on which seedlings were -			
		In cities and towns	In country		Total in cities and country	Dug	Treated	Total	Found	Destroyed		
			Having escaped bushes	Total						Dug	Treated	Total
Colo.	69.84	104	123	179	283	133	150	283	36	11	25	36
Ill.	16.57	1,033	937	1,255	2,288	1,157	1,131	2,288	292	227	65	292
Ind.	13.26	255	101	254	509	305	204	509	47	20	27	47
Iowa	33.47	204	678	981	1,185	243	941	1,184	233	54	179	233
Mich.	7.56	238	209	296	534	326	208	534	103	67	36	103
Minn.	54.20	131	357	699	830	274	556	830	115	30	85	115
Mont.	14.55	6	31	42	48	11	36	47	6	5	1	6
Nebr.	46.77	102	154	417	519	90	429	519	63	33	30	63
N. Dak.	37.42	52	0	97	149	44	105	149	16	4	12	16
Ohio	11.32	464	176	442	906	668	238	906	91	57	34	91
S. Dak.	39.00	60	58	226	286	48	238	286	13	7	6	13
Wis.	14.08	349	1,063	1,259	1,608	511	1,097	1,608	420	197	223	420
Wyo.	10.23	6	0	8	14	4	10	14	3	1	2	3
Total	368.27	3,004	3,887	6,155	9,159	3,814	5,343	9,157	1,438	713	725	1,438

Second Survey, Bushes and Seedlings, January 1, 1922 to December 31, 1932.

Table 8. Data showing, by States, the number of barberry bushes and seedlings found and destroyed on second survey in the barberry eradication campaign from January 1, 1922 to December 31, 1932.

State	Number of bushes found –				Number of bushes destroyed			Number of seedlings –			
	In cities and towns	In Country		Total					Destroyed		
		Escaped	Total		Dug	Treated	Total	Found	Dug	Treated	Total
Colo.	637	1,125	1,316	1,953	781	1,172	1,953	9,070	1,554	7,516	9,070
Ill.	8,189	117,716	120,393	128,582	27,792	100,790	128,582	66,265	49,723	16,542	66,265
Ind.	778	3,277	3,742	4,520	852	3,668	4,520	7,049	2,174	4,875	7,049
Iowa	2,533	19,624	23,956	26,489	1,747	24,740	26,487	144,410	10,322	134,088	144,410
Mich.	1,901	26,074	26,582	28,483	4,862	23,621	28,483	71,641	21,685	49,956	71,641
Minn.	967	9,356	12,733	13,700	2,732	10,968	13,700	8,382	890	7,492	8,382
Mont.	6	845	959	965	111	853	964	1,584	584	1,000	1,584
Nebr.	706	3,400	6,305	7,011	1,644	5,367	7,011	14,940	4,648	10,292	14,940
N. Dak.	327	0	1,956	2,283	510	1,773	2,283	795	255	540	795
Ohio	1,083	3,609	4,693	5,776	1,510	4,266	5,776	24,014	12,707	11,307	24,014
S. Dak.	486	390	2,078	2,564	423	2,141	2,564	1,392	1,129	263	1,392
Wis.	1,201	182,911	183,910	185,111	18,763	166,348	185,111	189,266	52,143	137,123	189,266
Wyo.	7	0	60	67	5	62	67	198	40	158	198
Total	18,821	368,327	388,683	407,504	61,732	345,769	407,501	539,006	157,854	381,152	539,006

Resurvey, Properties, January 1 to December 31, 1932.

Table 9. Data showing, by States, the number of properties on which sprouting bushes and seedlings were found and destroyed on resurvey in the barberry eradication campaign in the calendar year, January 1 to December 31, 1932.

State	Number of properties on which sprouting bushes were found -				Total number of properties cleared of sprouting bushes			Number of properties on which seedlings were -			
		In country		Total					Destroyed		
	In cities and towns	Having escaped bushes	Total	in cities and country	Dug	Treated	Total	Found	Dug	Treated	Total
Colorado	6	3	8	14	0	14	14	7	4	3	7
Illinois	5	17	28	33	13	20	33	5	3	2	5
Indiana	7	2	7	14	11	3	14	0	0	0	0
Iowa	18	17	33	51	14	37	51	9	7	2	9
Michigan	72	6	10	82	79	3	82	0	0	0	0
Minnesota	2	42	57	59	10	49	59	4	2	2	4
Montana	8	0	0	8	8	0	8	3	3	0	3
Nebraska	1	1	3	4	1	3	4	0	0	0	0
North Dakota	4	0	2	6	2	4	6	1	1	0	1
Ohio	5	1	1	6	5	1	6	0	0	0	0
South Dakota	1	0	2	3	1	2	3	0	0	0	0
Wisconsin	4	6	10	14	6	8	14	12	6	6	12
Wyoming	0	0	0	0	0	0	0	0	0	0	0
Total	133	95	161	294	150	144	294	41	26	15	41

Resurvey, Sprouting Bushes and Seedlings, January 1 to December 31, 1932.

Table 10. Data showing, by States, the number of sprouting bushes and seedlings found and destroyed on resurvey in the barberry eradication campaign in the calendar year January 1 to December 31, 1932.

State	Number of sprouting bushes found-				Number of sprouting bushes Destroyed			Number of seedlings -			
	In cities and towns	In country		Total	Dug	Treated	Total	Found	Destroyed		
		Escaped	Total						Dug	Treated	Total
Colo.	36	17	39	75	0	75	75	141	81	60	141
Ill.	49	131	158	207	53	154	207	3,160	110	3,050	3,160
Ind.	10	5	14	24	16	8	24	0	0	0	0
Iowa	59	75	134	193	62	131	193	1,340	1,276	64	1,340
Mich.	298	252	272	570	333	237	570	0	0	0	0
Minn.	5	715	752	757	20	737	757	453	270	183	453
Mont.	39	0	0	39	39	0	39	58	58	0	58
Nebr.	1	1	12	13	1	12	13	0	0	0	0
N. Dak.	112	0	67	179	94	85	179	100	100	0	100
Ohio	15	9	9	24	14	10	24	0	0	0	0
S. Dak.	1	0	4	5	1	4	5	0	0	0	0
Wis.	8	25	44	52	16	36	52	4,800	1,931	2,869	4,800
Wyo.	0	0	0	0	0	0	0	0	0	0	0
Total	633	1,230	1,505	2,138	649	1,489	2,138	10,052	3,826	6,226	10,052

Resurvey, Properties, April 1, 1918 to December 31, 1932.

Table 11. Data showing, by States, the number of properties on which sprouting bushes and seedlings were found and destroyed on resurvey in the barberry eradication campaign from April 1, 1918 to December 31, 1932.

State	Number of properties on which sprouting bushes were found –				Total number of properties cleared of sprouting bushes			Number of properties on which seedlings were –			
		In country		Total in cities and country					Destroyed		
	In cities and towns	Having escaped bushes	Total		Dug	Treated	Total	Found	Dug	Treated	Total
Colorado	1,466	117	201	1,667	1,433	234	1,667	114	23	91	114
Illinois	500	506	926	1,426	674	752	1,426	447	356	91	447
Indiana	192	151	297	489	336	152	488	53	16	37	53
Iowa	424	433	1,220	1,644	768	876	1,644	306	156	150	306
Michigan	233	140	321	554	467	87	544	196	191	5	196
Minnesota	766	751	1,536	2,302	1,711	591	2,302	2,285	2,126	159	2,285
Montana	138	9	63	201	178	23	201	48	32	16	48
Nebraska	225	40	458	683	368	315	683	8	6	2	8
N. Dakota	340	0	268	608	262	346	608	13	1	12	13
Ohio	1,511	310	1,070	2,581	2,212	369	2,581	745	565	180	745
S. Dakota	344	41	371	715	516	199	715	103	49	54	103
Wisconsin	938	726	1,037	1,975	1,377	598	1,975	375	181	194	375
Wyoming	34	0	10	44	33	7	40	7	7	0	7
Total	7,111	3,224	7,778	14,889	10,335	4,549	14,884	4,700	3,709	991	4,700

Resurvey, Sprouting Bushes and Seedlings, April 1, 1918 to December 31, 1932.

Table 12. Data showing, by States, the number of sprouting bushes and seedlings found and destroyed on resurvey in the barberry eradication campaign from April 1, 1918 to December 31, 1932.

State	Number of sprouting bushes found –				Number of sprouting bushes destroyed –			Number of seedlings –			
	In cities and towns	In country		Total	Dug	Treated	Total	Found	Destroyed		
		Escaped	Total						Dug	Treated	Total
Colo.	3,898	2,040	3,199	7,097	5,181	1,916	7,097	4,479	793	3,686	4,479
Ill.	5,693	881	17,950	23,643	10,631	13,012	23,643	585,189	405,701	179,488	585,189
Ind.	1,581	16,988	18,456	20,037	17,970	2,066	20,036	6,049	847	5,202	6,049
Iowa	4,638	10,733	28,220	32,858	16,097	16,761	32,858	64,782	30,222	34,560	64,782
Mich.	923	4,051	5,301	6,224	2,678	3,546	6,224	607,994	547,784	60,210	607,994
Minn.	14,144	19,307	39,281	53,425	40,954	12,471	53,425	29,231	4,755	24,476	29,231
Mont.	3,688	21	1,689	5,377	5,153	224	5,377	1,299	557	742	1,299
Nebr.	6,268	317	10,717	16,985	12,578	4,407	16,985	841	728	113	841
N. Dak.	1,195	0	1,758	2,953	489	2,464	2,953	703	100	603	703
Ohio	6,178	10,283	14,640	20,818	13,692	7,126	20,818	375,379	117,262	258,117	375,379
S. Dak.	20,984	5,318	22,226	43,210	36,634	6,576	43,210	10,643	7,841	2,802	10,643
Wis.	11,300	76,454	81,572	92,872	19,538	73,334	92,872	1,365,439	141,492	1,223,947	1,365,439
Wyo.	624	0	29	653	553	21	574	53	53	0	53
Total	81,114	154,323	245,038	326,152	182,148	143,924	326,072	4,052,081	1,258,135	2,793,946	4,052,081

Table 13. Data showing, by States, the number of original bushes, sprouting bushes, and seedlings dug and treated, and the total number destroyed by both methods, from January 1 to December 31, 1932.

State	Original bushes			Sprouting bushes			Seedlings			Totals		
	Dug	Treated	Total	Dug	Treated	Total	Dug	Treated	Total	Dug	Treated	Total
Colo.	8	140	148	0	75	75	81	60	141	89	275	364
Ill.	398	5,110	5,508	53	154	207	1,690	8,452	10,142	2,141	13,716	15,857
Ind.	82	3,358	3,440	16	8	24	135	6,978	7,113	233	10,344	10,577
Iowa	782	10,346	11,128	62	131	193	21,716	17,689	39,405	22,560	28,166	50,726
Mich.	1,596	9,671	11,267	333	237	570	6,847	13,674	20,531	8,776	23,582	32,358
Minn.	133	1,561	1,694	20	737	757	440	1,743	2,183	593	4,041	4,634
Mont.	7	1	8	39	0	39	58	0	58	104	1	105
Nebr.	4	77	81	1	12	13	14	0	14	19	89	108
N. Dak.	1	18	19	94	85	179	100	153	253	195	256	451
Ohio	764	3,062	3,826	14	10	24	7,050	9,045	16,095	7,828	12,117	19,945
S. Dak.	8	48	56	1	4	5	43	0	43	52	52	104
Wis.	239	31,091	31,330	16	36	52	2,714	6,480	9,194	2,969	37,607	40,576
Wyo.	21	32	53	0	0	0	93	0	93	114	32	146
Total	4,043	64,515	68,558	649	1,489	2,138	40,981	64,274	105,255	45,673	130,278	175,951

Eradication, 1918 to 1932.

Table 14. Data showing, by States, the number of original bushes, sprouting bushes, and seedlings dug and treated and the total number destroyed by both methods from April 1, 1918 to December 31, 1932.

State	Original bushes		Spouting bushes		Seedlings		Totals		
	Dug	Treated	Dug	Treated	Dug	Treated	Dug	Treated	Total
Colo.	25,225	2,350	5,181	1,916	2,362	17,609	32,768	21,875	54,643
Ill.	204,420	213,931	10,631	13,012	481,380	1,713,325	696,431	1,940,268	2,636,699
Ind.	99,696	108,132	17,970	2,066	4,141	27,096	121,807	137,294	259,101
Iowa	776,354	67,602	16,097	16,761	54,591	201,572	847,042	285,935	1,132,977
Mich.	388,082	419,582	2,678	3,546	1,479,466	3,490,184	1,870,226	3,913,312	5,783,538
Minn.	782,078	23,973	40,954	12,471	27,654	38,817	850,686	75,261	925,947
Mont.	10,903	2,343	5,153	224	18,123	3,859	34,179	6,426	40,605
Nebr.	91,821	8,260	12,578	4,407	6,531	17,929	110,930	30,596	141,526
N. Dak.	20,113	3,664	489	2,464	643	2,441	21,245	8,569	29,814
Ohio	253,767	170,746	13,692	7,126	156,439	1,732,585	423,898	1,910,457	2,334,355
S. Dak.	49,267	12,563	36,634	6,576	25,596	3,753	111,497	22,892	134,389
Wis.	3,354,831	241,606	19,538	73,334	180,337	1,316,983	3,554,706	1,631,923	5,186,629
Wyo.	4,166	96	553	21	186	158	4,905	275	5,180
Total	6,060,723	1,274,848	182,148	143,924	2,437,449	8,566,311	8,680,320	9,985,083	18,665,403

Chemical Treatment, January 1 to December 31, 1932.

Table 15. Data showing, by States, the number of properties on which barberry bushes and sprouting bushes were treated with chemicals, and the number of bushes, sprouting bushes and seedlings treated from January 1 to December 31, 1932.

State	Number Treated								
	With Salt			With Other Chemicals			Total		
	Properties	Bushes	Seedlings	Properties	Bushes	Seedlings	Properties	Bushes	Seedlings
Colorado	17	215	60	0	0	0	17	215	60
Illinois	240	5,264	8,452	0	0	0	240	5,264	8,452
Indiana	87	3,227	2,926	14	139	4,052	101	3,366	6,978
Iowa	314	10,443	17,689	6	34	0	320	10,477	17,689
Michigan	136	9,908	13,674	0	0	0	136	9,908	13,674
Minnesota	143	2,214	1,743	9	84	0	152	2,298	1,743
Montana	1	1	0	0	0	0	1	1	0
Nebraska	18	85	0	3	4	0	21	89	0
N. Dakota	8	103	153	0	0	0	8	103	153
Ohio	80	3,070	9,045	1	2	0	81	3,072	9,045
S. Dakota	19	52	0	0	0	0	19	52	0
Wisconsin	195	30,859	6,480	0	268	0	195	31,127	6,480
Wyoming	2	32	0	0	0	0	2	32	0
Total	1,260	65,473	60,222	33	531	4,052	1,293	66,004	64,274

Chemicals, Quantities Used, January 1 to December 31, 1932.

Table 16. Data showing, by States, quantities of chemicals used in the barberry eradication campaign from January 1 to December 31, 1932.

State	Salt (Tons) Furnished by -				Other Chemicals Used		Kerosene (Gallons) Furnished by -		
	Property Owner	State Agency	U. S. D.A.	Total	Ammonium thiocyanate (lbs.)	Ethylene Oxide (c.c.)	Property Owner	U.S.D.A.	Total
Colorado	0	0	.52	.52	0	0	0	0	0
Illinois	.015	0	24.0015	24.0165	0	0	0	0	0
Indiana	0	0	10.875	10.875	0	0	0	218	218
Iowa	0	0	39.558	39.558	0	0	0	58	58
Michigan	0	0	37.55	37.55	0	0	0	0	0
Minnesota	.609	0	12.967	13.576	106.5	600	1.0	0	1
Montana	0	0	.01	.01	0	0	0	0	0
Nebraska	.02	0	.60	.62	0	0	4.0	0	4
N. Dakota	.1	.58	.01	.69	0	0	0	0	0
Ohio	0	7.20	10.81	18.01	0	0	1/ 7.0	0	7
S. Dakota	0	0	.57	.57	0	0	0	0	0
Wisconsin	0	82.212	4.305	86.517	200	0	0	0	0
Wyoming	0	0	.1	.1	0	0	0	0	0
Total	.744	89.992	141.8765	232.6125	306.5	600	12.0	276	288

1/ Furnished by the State.

Chemical Treatment, September 1, 1921 to December 31, 1932.

Table 17. Data showing, by States, the number of properties on which barberry bushes and sprouting barberry bushes were treated with chemicals, and the number of bushes, sprouting bushes, and seedlings treated from September 1, 1921 to December 31, 1932.

State	Number treated with											
	Salt			Sodium Arsenite			Other Chemicals			Total		
	Properties	Bushes	Seedlings	Properties	Bushes	Seedlings	Properties	Bushes	Seedlings	Properties	Bushes	Seedlings
Colo.	424	4,158	17,609	0	0	0	14	108	0	438	4,266	17,609
Ill.	3,340	221,882	1,713,141	34	839	0	47	4,222	184	3,421	226,943	1,713,325
Ind.	926	109,849	23,001	0	0	0	56	349	4,095	982	110,198	27,096
Iowa	2,924	82,158	200,942	4	49	52	54	2,156	578	2,982	84,363	201,572
Mich.	1,914	352,347	3,362,635	239	8,594	29,911	137	62,187	97,638	2,290	423,128	3,490,184
Minn.	1,422	36,040	38,160	25	85	102	33	319	555	1,480	36,444	38,817
Mont.	130	2,542	3,659	0	0	0	1	25	200	131	2,567	3,859
Nebr.	535	8,927	16,500	0	0	0	365	3,740	1,429	900	12,667	17,929
N. Dak.	507	6,061	2,441	21	67	0	0	0	0	528	6,128	2,441
Ohio	2,111	165,626	1,586,701	10	1,069	59,300	301	11,177	86,584	2,422	177,872	1,732,585
S. Dak	705	19,126	3,737	0	0	0	8	13	16	713	19,139	3,753
Wis.	2,312	308,847	1,315,281	350	5,824	1,702	1	269	0	2,663	314,940	1,316,983
Wyo.	20	117	158	0	0	0	0	0	0	20	117	158
Total	17,270	1,317,680	8,283,965	683	16,527	91,067	1,017	84,565	191,279	18,970	1,418,772	8,566,311

Chemicals, Quantities Used, September 1, 1921 to December 31, 1932.

Table 18. Data showing, by States, quantities of chemicals used in the barberry eradication campaign from September 1, 1921 to December 31, 1932.

State	Salt (Tons) Furnished by -					Other Chemicals Used			Kerosene (Gallons) Furnished by -		
	Property Owner	State Agency	C.P. G.R.	U.S.D.A.	Total	Sodium arsenite gal.	Ammonium thiocyanate lbs.	Ethylene oxide c.c.	Property owner	U.S.D.A.	Total
Colo.	0	0	0	11.20	11.20	0	0	0	1/ 14	80	94
Ill.	.765	58.954	31.	457.499	548.218	77	0	0	0	972	972
Ind.	.835	0	0	88.943	89.778	0	0	0	0	536	536
Iowa	44.2225	0	20.69	274.7525	339.665	41.125	0	0	404.25	1,512.5	1,916.75
Mich.	.03	0	8.49	648.99	657.51	304.9	0	0	0	11,341.	11,341.
Minn.	3.755	.84	9.21	103.969	117.774	23.25	311	4,700	1	43.65 2/	44.65
Mont.	.32	0	0	9.14	9.46	0	0	0	0	30.	30.
Nebr.	.176	0	8.55	27.88	36.606	0	0	0	155.5	5,377.5	5,533.
N. Dak.	19.83	7.23	0	6.1	33.16	7	0	0	0	0	0
Ohio	3.04	914.31	0	50.59	967.94	46.3	0	0	5,223 3/	1,729	6,952.
S. Dak.	14.47	0	17.85	19.52	51.84	0	0	0	0	22	22.
Wis.	.27	585.198	70.	152.242	807.71	598	200	0	.375 4/	0	.375
Wyo.	.05	0	0	.505	.555	0	0	0	0	0	0
Total	87.7635	1,566.532	165.79	1851.33	3,671.416	1,097.575	511	4,700	5,798.125	21,643.65	27,441.775

Furnished by the State

1/ 10 pounds sodium chlorate

2/ 10 gallons of drip oil

3/ 4941 gallons kerosene

4/ .375 gallons carbon bisulphide

Grand Summary, Original Bushes, Sprouting Bushes, and Seedlings, January 1 to December 31, 1932.

Table 19. Data showing, by States, the number of bushes, sprouting bushes, and seedlings found and destroyed in all surveys in the barberry eradication campaign, from January 1 to December 31, 1932.

State	Original Bushes		Sprouting Bushes		Seedlings		Grand Total	
	Found	Destroyed	Found	Destroyed	Found	Destroyed	Found	Destroyed
Colorado	148	148	75	75	141	141	364	364
Illinois	5,508	5,508	207	207	10,142	10,142	15,857	15,857
Indiana	3,440	3,440	24	24	7,113	7,113	10,577	10,577
Iowa	11,128	11,128	193	193	39,405	39,405	50,726	50,726
Michigan	11,267	11,267	570	570	20,521	20,521	32,358	32,358
Minnesota	1,694	1,694	757	757	2,183	2,183	4,634	4,634
Montana	8	8	39	39	58	58	105	105
Nebraska	81	81	13	13	14	14	108	108
North Dakota	19	19	179	179	253	253	451	451
Ohio	3,826	3,826	24	24	16,095	16,095	19,945	19,945
South Dakota	56	56	5	5	43	43	104	104
Wisconsin	31,321	31,330	52	52	9,188	9,194	40,561	40,576
Wyoming	53	53	0	0	93	93	146	146
Total	68,549	68,558	2,138	2,138	105,249	105,255	175,936	175,951

Grand Summary, Original Bushes, Sprouting Bushes, and Seedlings, 1918 - 1932.

Table 20. Data showing, by States, the number of bushes, sprouting bushes, and seedlings found and destroyed in all surveys in the barberry eradication campaign, from April 1, 1918 to December 31, 1932.

State	Original Bushes		Sprouting Bushes		Seedlings		Grand Total	
	Found	Destroyed	Found	Destroyed	Found	Destroyed	Found	Destroyed
Colorado	27,576	27,575	7,097	7,097	19,971	19,971	54,644	54,643
Illinois	418,351	418,351	23,643	23,643	2,194,705	2,194,705	2,636,699	2,636,699
Indiana	207,830	207,828	20,037	20,036	31,237	31,237	259,104	259,101
Iowa	843,962	843,956	32,858	32,858	256,163	256,163	1,132,983	1,132,977
Michigan	807,664	807,664	6,224	6,224	4,969,650	4,969,650	5,783,538	5,783,538
Minnesota	806,051	806,051	53,425	53,425	66,471	66,471	925,947	925,947
Montana	13,254	13,246	5,377	5,377	21,982	21,982	40,613	40,605
Nebraska	100,081	100,081	16,985	16,985	24,460	24,460	141,526	141,526
North Dakota	23,777	23,777	2,953	2,953	3,084	3,084	29,814	29,814
Ohio	424,513	424,513	20,818	20,818	1,889,024	1,889,024	2,334,355	2,334,355
South Dakota	61,830	61,830	43,210	43,210	29,349	29,349	134,389	134,389
Wisconsin	3,596,437	3,596,437	92,872	92,872	1,497,320	1,497,320	5,186,629	5,186,629
Wyoming	4,262	4,262	653	574	344	344	5,259	5,180
Total	7,335,588	7,335,571	326,152	326,072	11,003,760	11,003,760	18,665,500	18,665,403

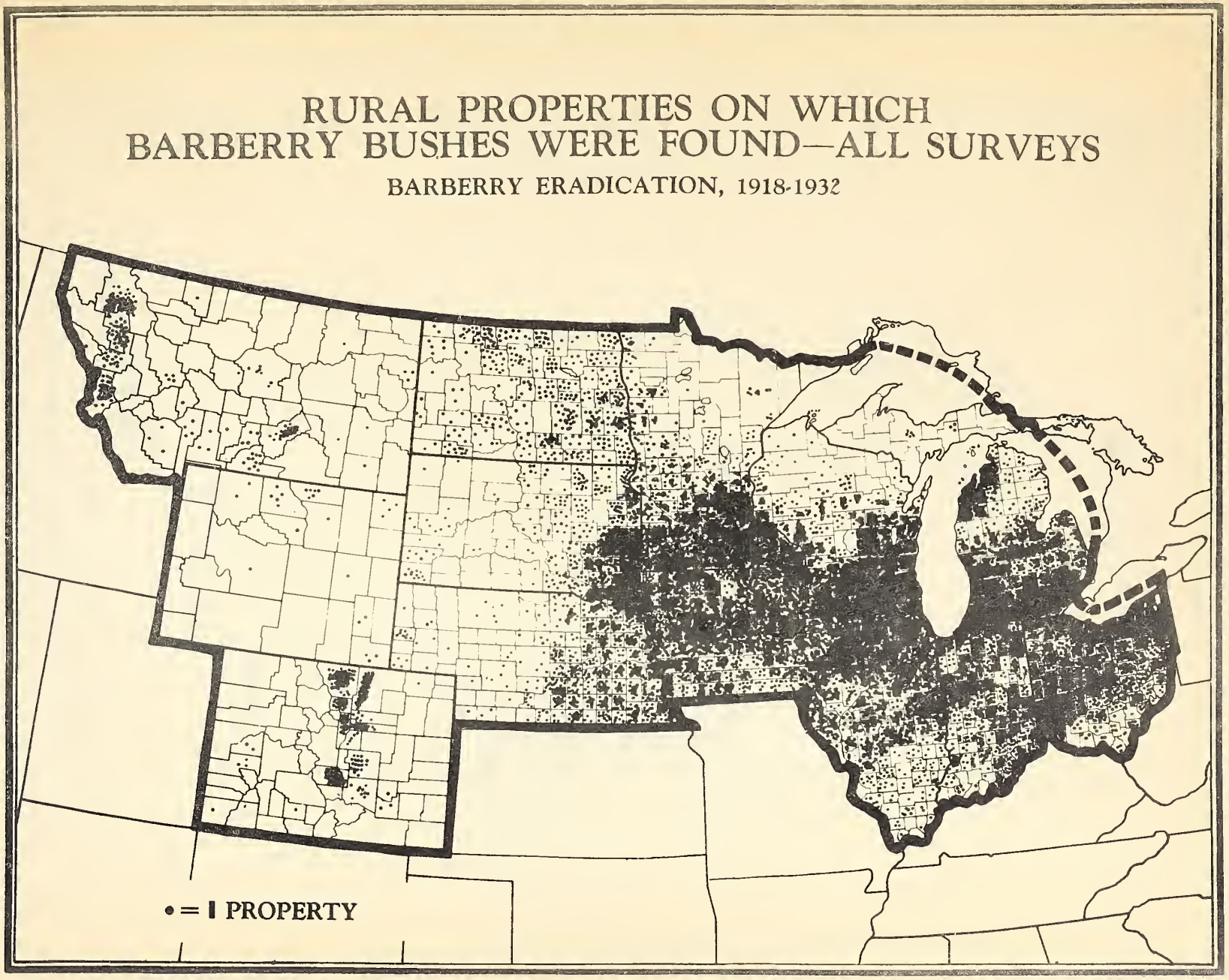
GRAND SUMMARY BY YEARS, ORIGINAL BUSHES, SPROUTING BUSHES, AND SEEDLINGS, 1918 to 1932.

Table 21. Data showing, by calendar years, the total numbers of original bushes, sprouting bushes, and seedlings found and destroyed in all surveys in the barberry eradication campaign, from April 1, 1918 to December 31, 1932.

Year	Original Bushes		Sprouting Bushes		Seedlings		Totals	
	Found	Destroyed	Found	Destroyed	Found	Destroyed	Found	Destroyed
1918	1,842,236	1,690,475	1,996	1,996	500	500	1,844,735	1,692,971
1919	2,096,063	2,025,389	17,874	17,874	3,500	3,500	2,117,437	2,046,763
1920	1,506,007	518,315	33,148	33,148	1,500	1,500	1,540,655	552,963
1921	175,662	209,647	27,697	27,697	18,557	18,557	221,916	255,901
1922	209,397	729,721	64,352	63,883	69,733	69,733	343,482	863,337
1923	233,161	251,013	106,700	106,145	3,665,581	3,610,681	4,005,442	3,967,839
1924	295,814	388,632	21,852	21,850	847,771	844,485	1,165,437	1,254,967
1925	142,550	149,822	17,036	17,141	701,796	754,505	861,382	921,468
1926	204,530	723,580	16,149	16,504	2,062,689	2,064,805	2,283,368	2,804,889
1927	207,446	223,859	5,899	6,203	1,475,209	1,475,284	1,688,554	1,705,346
1928	114,416	115,031	2,849	2,849	1,407,600	1,407,990	1,524,855	1,525,870
1929	103,163	104,267	1,247	1,248	446,070	446,170	550,480	551,685
1930	61,074	61,167	2,184	2,364	104,715	105,340	167,973	168,871
1931	75,517	76,095	5,031	5,032	93,300	95,455	173,848	176,582
1932	68,549	68,558	2,138	2,138	105,249	105,255	175,936	175,951
Totals	7,335,588	7,335,571	326,152	326,072	11,003,760	11,003,760	18,665,500	18,665,403

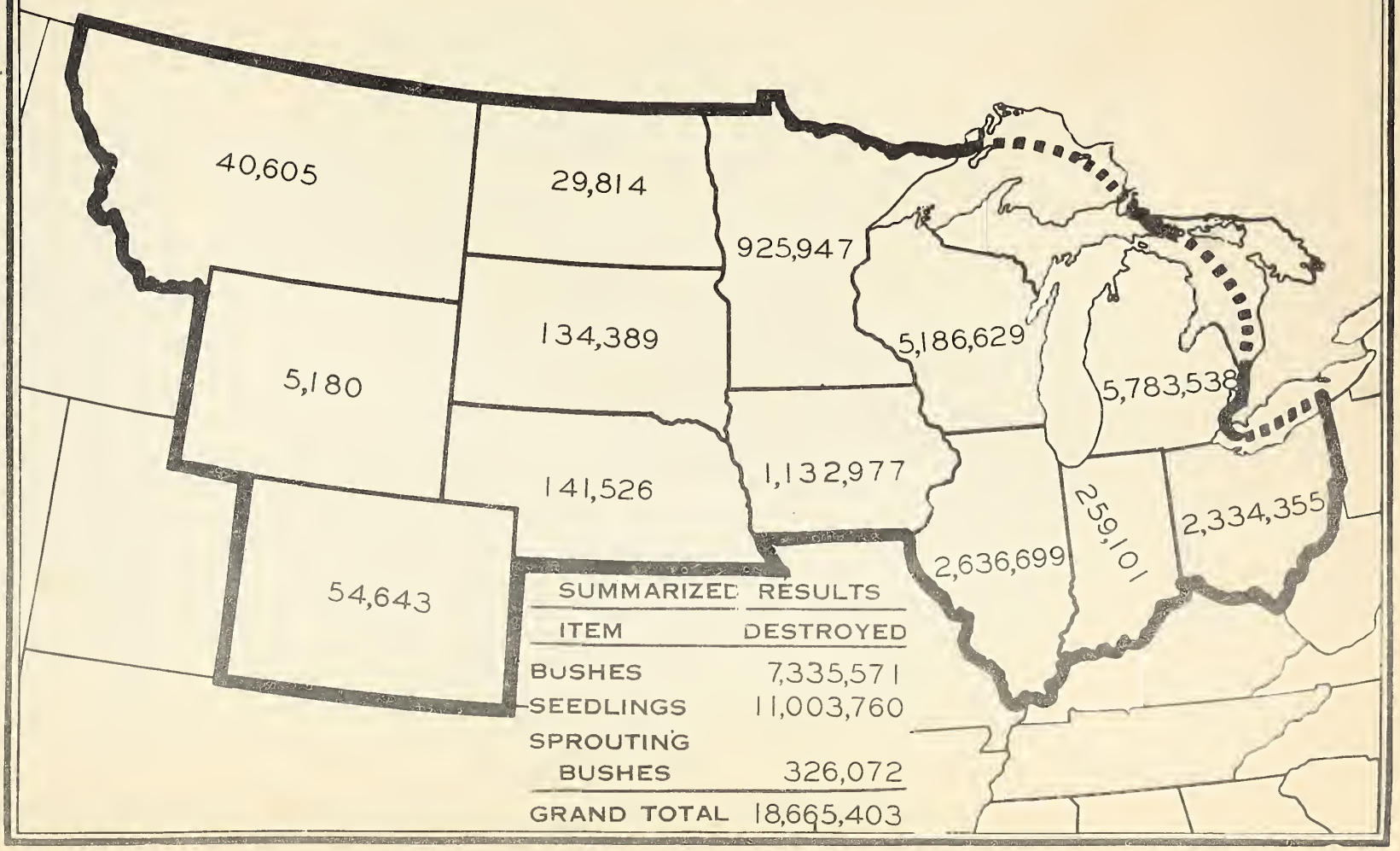
RURAL PROPERTIES ON WHICH BARBERRY BUSHES WERE FOUND—ALL SURVEYS

BARBERRY ERADICATION, 1918-1932



BE-2463

NUMBERS OF BARBERRY BUSHES AND SEEDLINGS DESTROYED 1918-1932



SUMMARIZED RESULTS	
ITEM	DESTROYED
BUSHES	7,335,571
SEEDLINGS	11,003,760
SPROUTING BUSHES	326,072
GRAND TOTAL	18,665,403

BE-2457